OPERATING SUMMARY

1974

TOWN OF
NEWMARKET

WATER POLLUTION CONTROL PLANT

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, CENTRAL REGION
P. Cockburn

MANAGER, UTILITY OPERATIONS
A. Thomas

NEWMARKET

WATER POLLUTION CONTROL PLANT

operated for

THE TOWN OF NEWMARKET

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

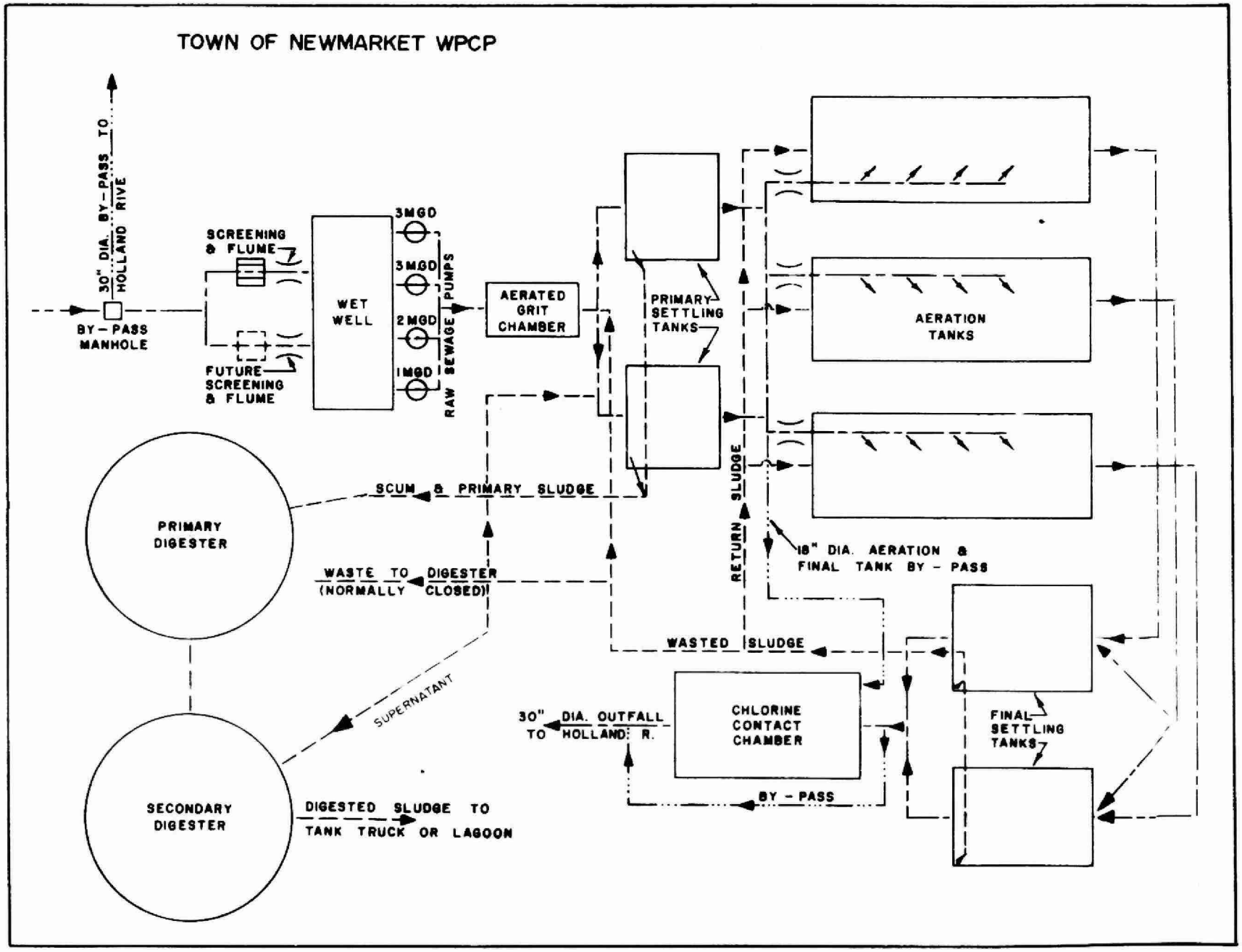
prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

CONTENTS


TOWN OF NEWMARKET WPCP
30" DIA. BY-PASS TO HOLLAND RIVE
BY-PASS MANHOLE
SCREENING & FLUME
FUTURE SCREENING & FLUME
WET WELL
3MGD
3MGD
2MGD
1MGD
RAW SEWAGE PUMPS
AERATED GRIT CHAMBER
PRIMARY SETTLING TANKS
AERATION TANKS
PRIMARY DIGESTER
SCUM & PRIMARY SLUDGE
RETURN SLUDGE
18" DIA. AERATION & FINAL TANK BY-PASS
WASTE TO DIGESTER (NORMALLY CLOSED)
WASTED SLUDGE
SUPERNATANT
30" DIA. OUTFALL TO HOLLAND R.
CHLORINE CONTACT CHAMBER
FINAL SETTLING TANKS
BY-PASS
SECONDARY DIGESTER
DIGESTED SLUDGE TO TANK TRUCK OR LAGOON

DESIGN DATA

PROJECT Town of Newmarket WPCP

PROJECT NO. 2-0087-61

TREATMENT Activated Sludge

DESIGN FLOW 2.0 mgd

DESIGN POPULATION
Newmarket 9,200
East Gwillimbury 10,000

BOD - Raw Sewage 220 mg/l
- Removal 90%

SS - Raw Sewage 212 mg/l
- Removal 90%

PRIMARY TREATMENT

Screening

in East Channel; 1" spacing

Raw Sewage Pumps

Type: Smart Turner
Size: Two 1875 gpm @ 30' tdh
One 1560 gpm @ 30' tdh
One 1000 gpm @ 30' tdh

Grit Removal

Type: Aerated, grit removed by air lift
Size: Two 14.3' x 6' x 8.1' swd (9,700 gal)
Retention: 7 min
Air Supply: One Sutorbilt 130 scfm @ 8 psi

Primary Sedimentation

Type: Eimco
Size: Two 30' x 30' x 11.7' swd (131,000 gal)
Retention: 1.57 hr
Loading: Surface, 1110 gal/ft^2/day
Weir, 10,800 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Mechanical; single-pass
Size: Three 90' x 30' x 10.7' (107,500 cu ft or 0.67 mil gal)

Aerators

Twelve Simcar

Secondary Sedimentation

Type: Eimco
Size: Two 35' x 35' x 13' swd (197,000 gal)
Retention: 2.4 hr
Loading: Surface, 840 gal/ft^2/day
Weir, 7,870 gal/ft/day

CHLORINATION

Wallace & Tiernan

Chlorine Contact Chamber

Size: One 61.4' x 9' x 10.1' (34,800 gal)
Retention: 25 min

OUTFALL

to Holland River

SLUDGE HANDLING

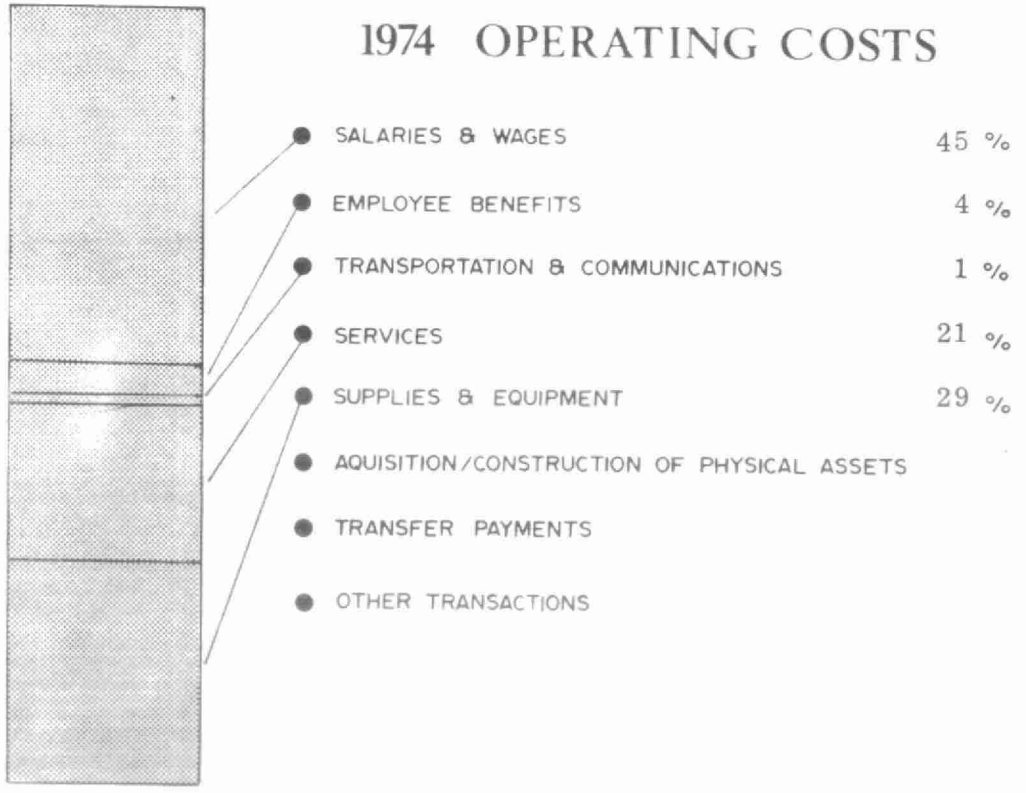
Digestion System - Two Stage

Primary --
Type: Gas mixed concrete
C.P. Lammert gas comp.
Size: One 40 dia x 21.25 swd (26,800 cu ft or 0.167 mil gal)
Loading: 2.9 lb/cu ft/mo

Secondary --
Size: One 40; dia x 23' swd (28,950 cu ft or 0.18 mil gal)
Total Loading: 1.4 lb/cu ft/mo

ANNUAL COSTS

1974 OPERATING COSTS



YEARLY OPERATING COSTS

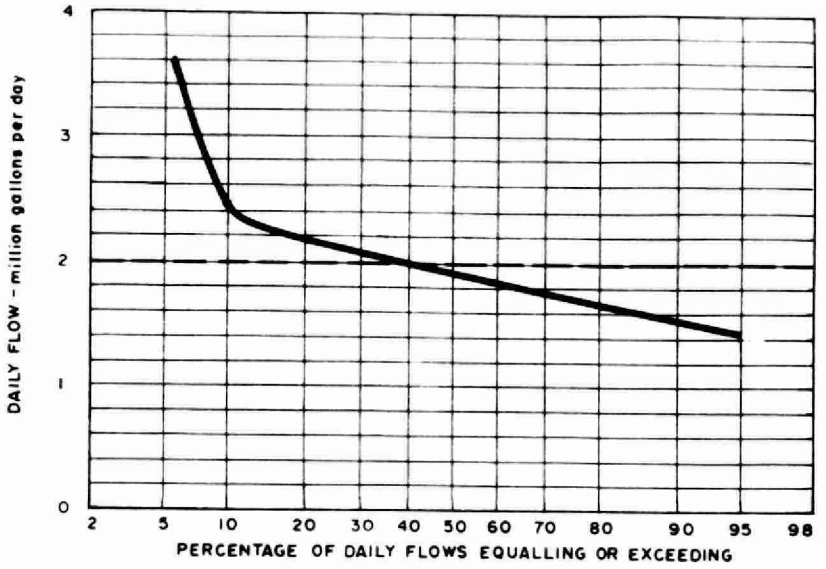
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			$/M G	¢/lb BOD
1969	612	56, 910	93	5
1970	578	61, 388	106	7
1971	633	77, 198	122	7
1972	732*	81, 777	112	6
1973	647	116, 640	180	10
1974	706	130, 009	184	14

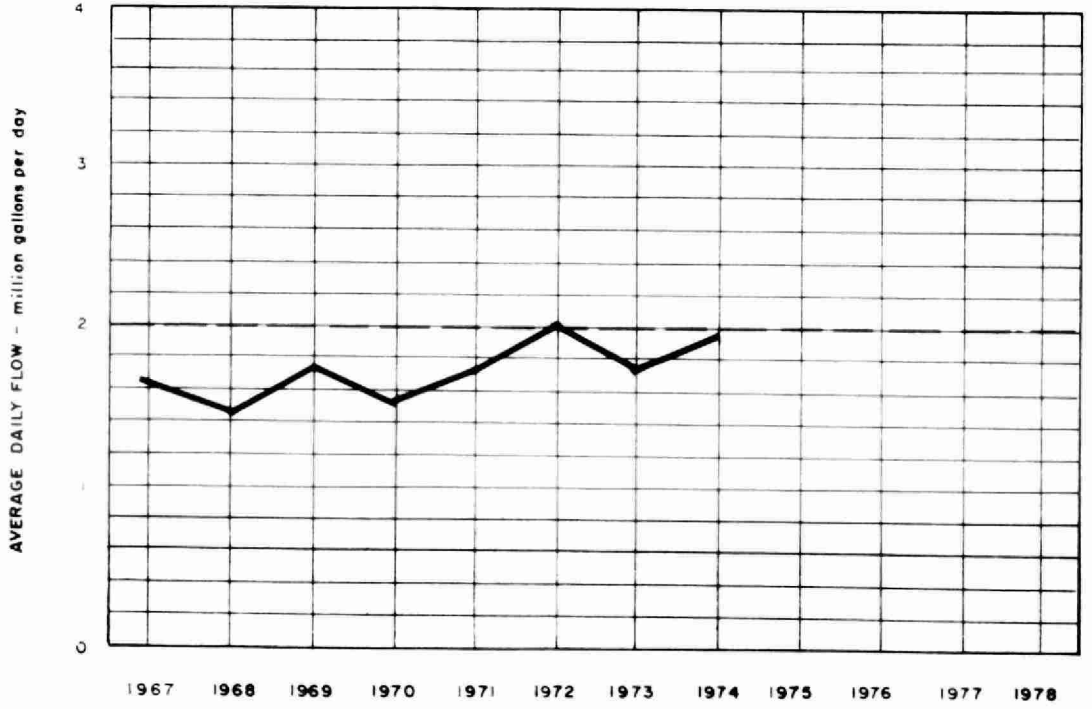
OPERATING EXPENDITURES

Regular Staff	$ 54,360	$
Casual (Unclassified) Staff	3,982	
TOTAL SALARIES AND WAGES		58,342
TOTAL EMPLOYEE BENEFITS		5,410
TOTAL TRANSPORTATION AND COMMUNICATIONS		1,164
Insurance	2,659	
Sludge Haulage	21,541	
Repairs and Maintenance	3,359	
Other Services	463	
TOTAL SERVICES		28,022
Machinery and Equipment	4,451	
Chemicals	11,848	
Utilities	16,539	
Other Supplies and Equipment	4,435	
TOTAL SUPPLIES AND EQUIPMENT		37,273
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	$ 130,009

PROCESS DATA

FLOWS



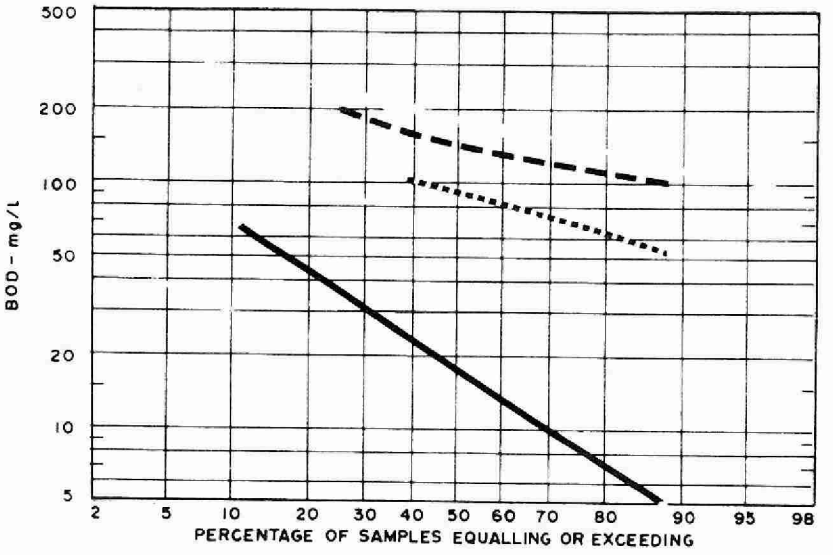


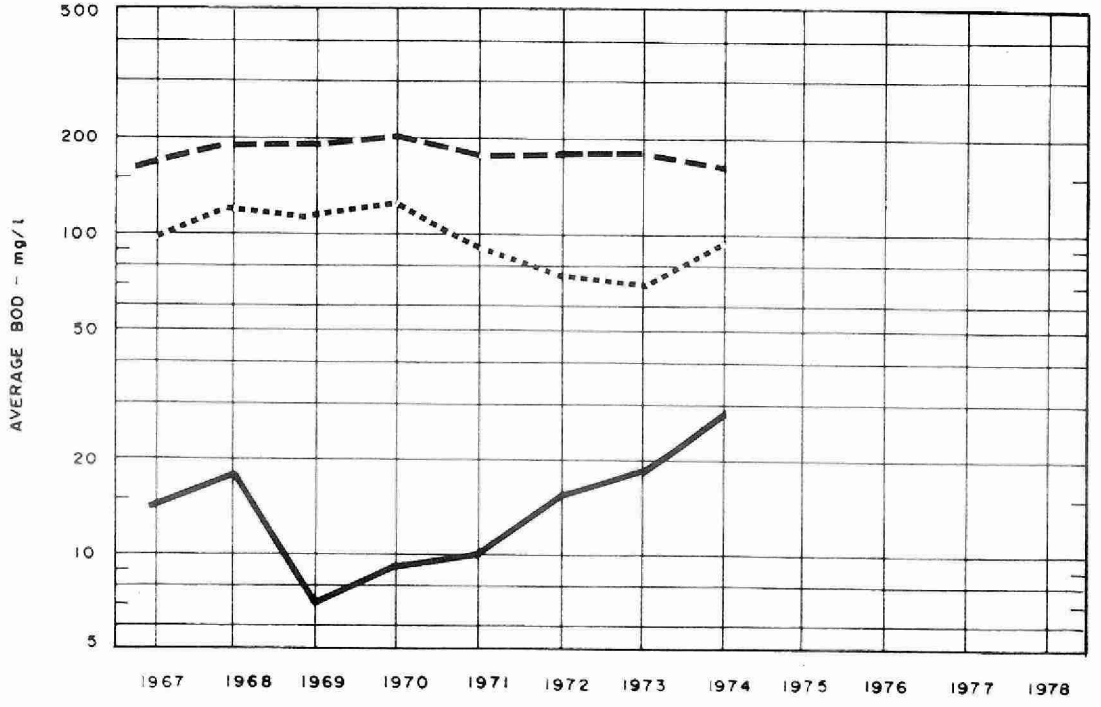
DESIGN CAPACITY _ _ _ _ _ _ _

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	76.7	2.47	5.84	120	95	21	19.2	463	21	95	339	9.1	2.2
FEB	61.4	2.19	6.98	200	40	80	98.2	227	8	96	134	8.0	1.9
MAR	63.5	2.05	6.38					190	6	97	117	6.1	3.2
APR	67.9	2.26	3.97					262	10	96	171	4.1	2.8
MAY	85.3	2.75	6.50					215	11	95	174	6.4	1.7
JUNE	51.4	1.71	1.94	270	15	94	131.1	203	13	94	98	7.0	.7
JULY	54.0	1.74	3.80	130	18	86	60.5	210	10	95	108	6.0	4.7
AUG	48.0	1.55	2.81					302	8	97	141		
SEPT	43.2	1.44	1.70	130	3	98	54.9	245	8	97	102	8.5	1.9
OCT	46.1	1.49	1.65	160	18	89	65.5	284	8	97	127	1.0	5.5
NOV	54.0	1.80	6.38	130	12	91	64.8	181	10	94	92	7.6	2.4
DEC	55.3	1.78	2.09					222	13	94	115	6.6	1.3
TOTAL	706.8	-	-	-	-	-		-	-	-	1555	-	-
AVG.	58.9	1.94	MAXIMUM 6.98	163	29	82	78.9	230	10	96	130	6.5	2.1
No. of Samples	-	-	-	7	7	-	-	54	54	-	-	17	23

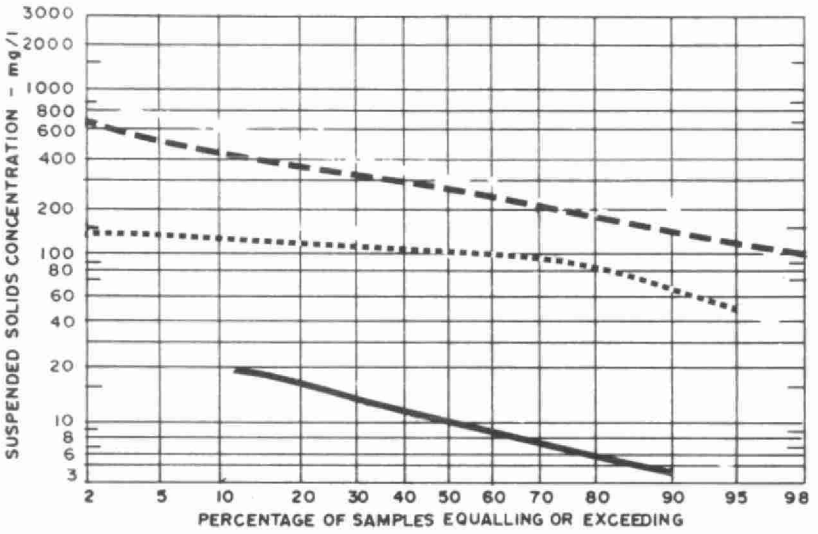
BIOCHEMICAL OXYGEN DEMAND

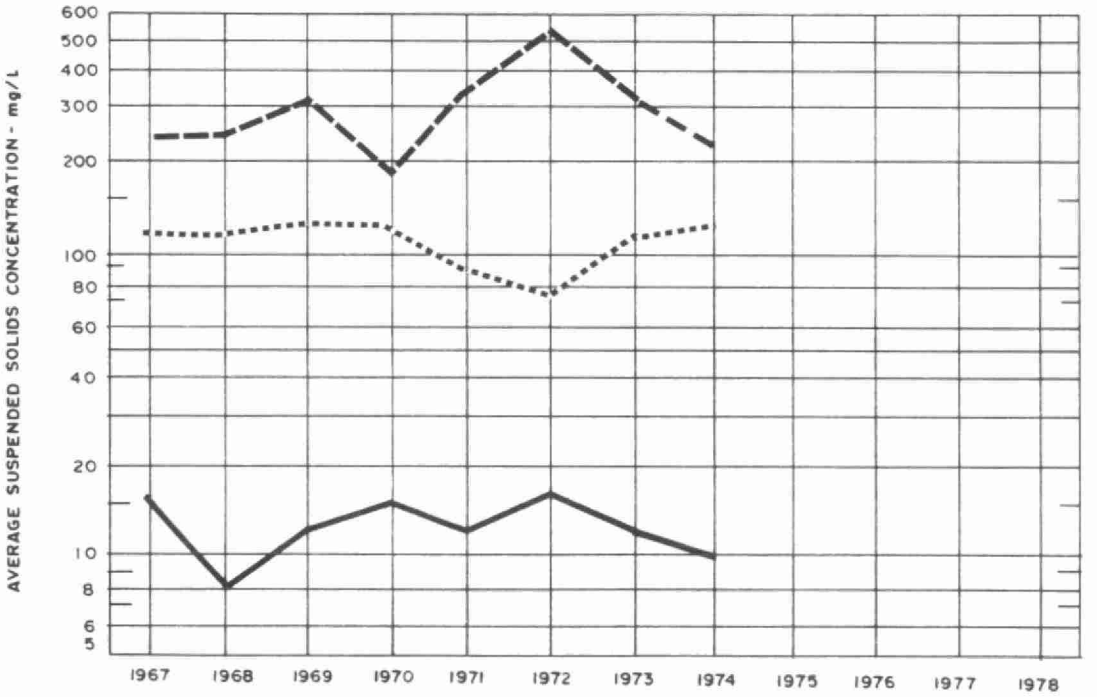




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

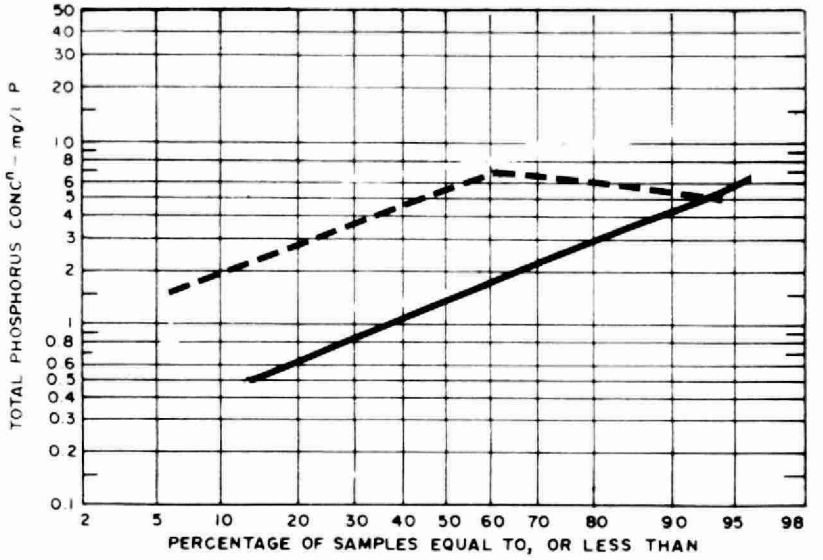
SUSPENDED SOLIDS

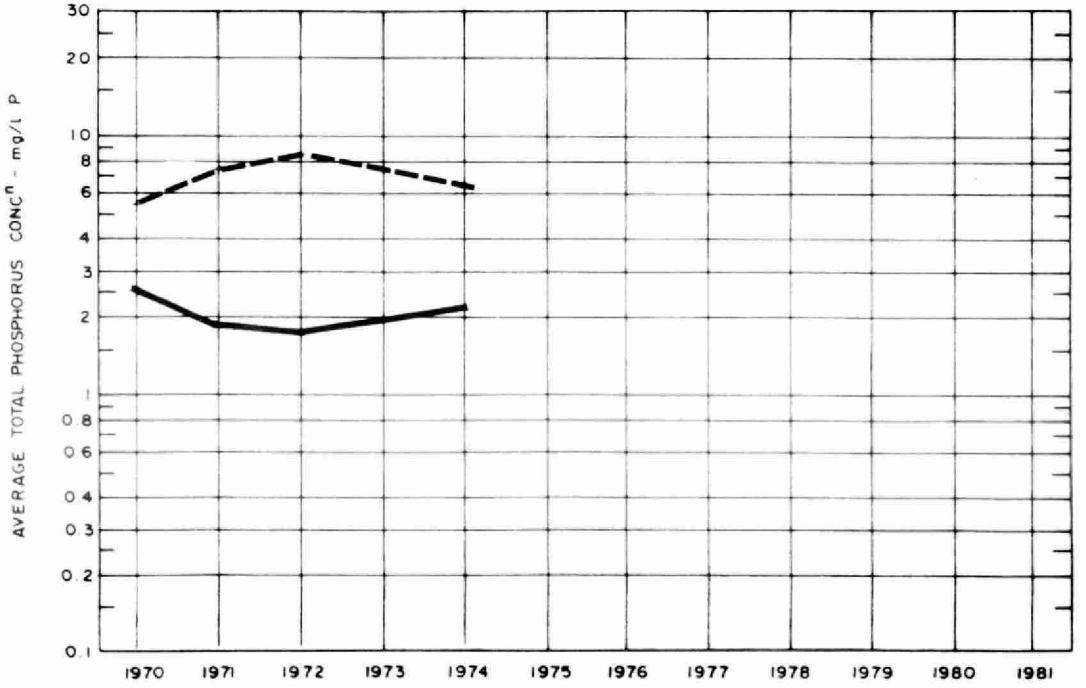




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

PHOSPHORUS

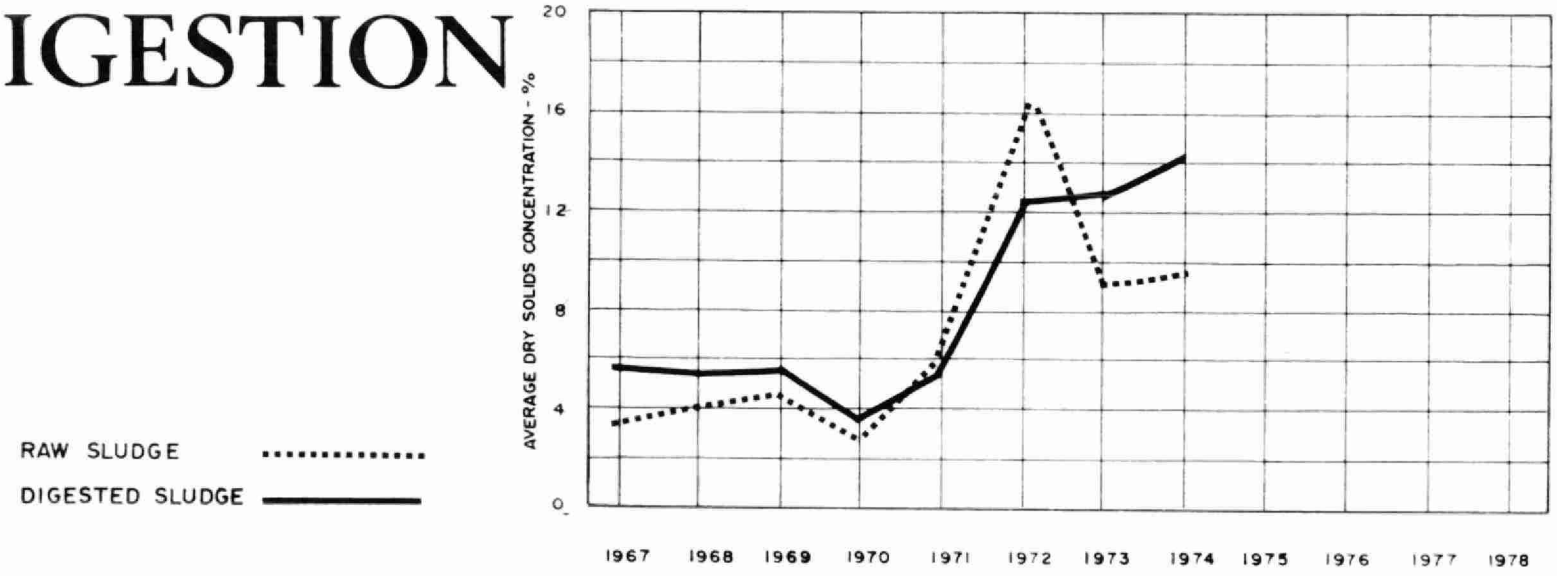


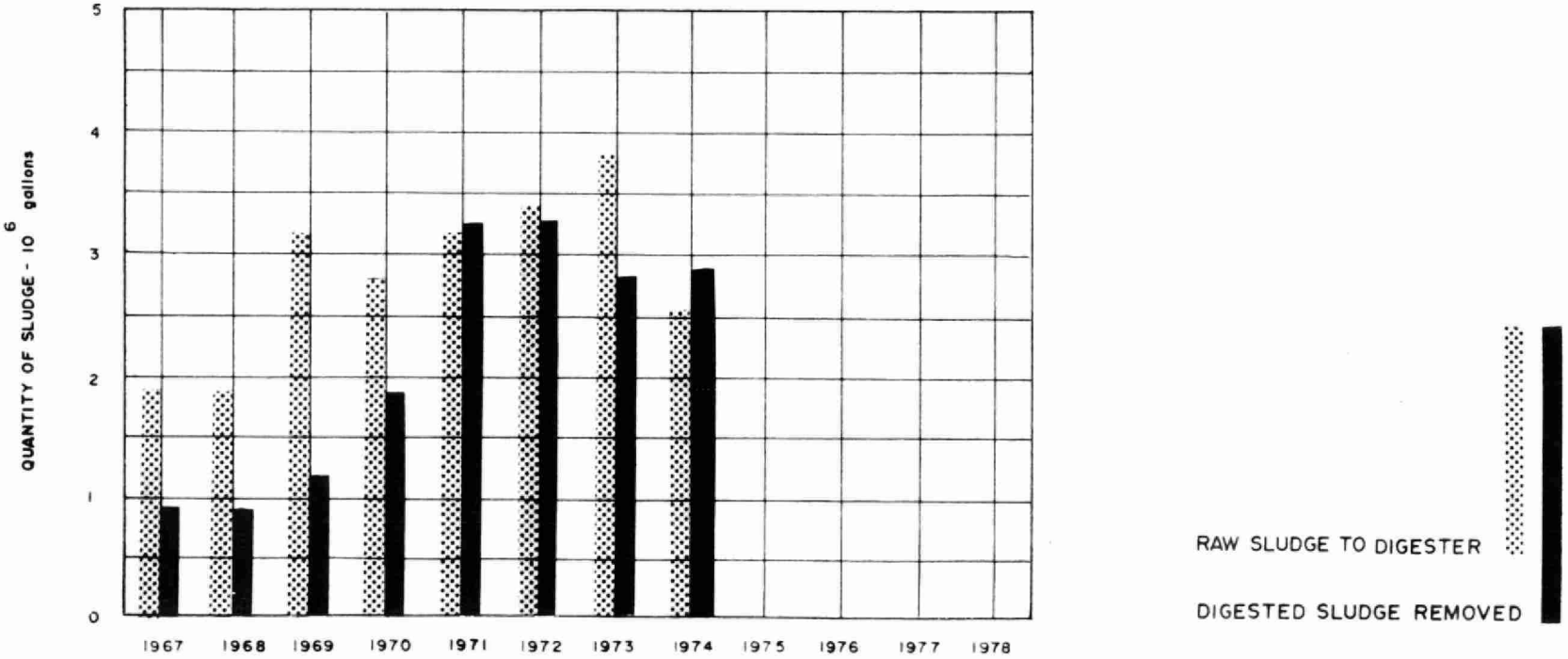


PLANT INFLUENT

PLANT EFFLUENT

DIGESTION


AVERAGE DRY SOLIDS CONCENTRATION - %
20
16
12
8
4
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE
DIGESTED SLUDGE


QUANTITY OF SLUDGE - 10^6 gallons
5
4
3
2
1
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED 10^3 pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^5 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^5 gallons	TOTAL SOLIDS %	VOL SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN	91			70	210	2300	.10		2.4	11.0	25	2.4	30.4	19	3.6	1429
FEB	96			120	119	1400	.28		2.1	12.0	55	2.3	19.4	30	.4	1336
MAR	116				178	1500			3.4			2.2				1287
APR	96				101	1600			2.6	9.0	24	1.9	13.7	26	.6	1134
MAY	106				123	1500			1.5			2.1				1220
JUNE	92	2.7 *	5.2	140	104	1200	.03		2.0	2.3	22	2.7			.6	1598
JULY	93	3.0	5.5	120	100	900	.34		1.6	4.6	46	2.7	12.3		.3	1622
AUG	97	2.6	5.5		133	1300			1.6			2.2	12.0			1305
SEPT	92	2.5	5.6	80	105	1600	.10		2.1	10.7		2.6	7.4		1.4	1554
OCT	111	1.4	3.2	90	126	1300	.15		2.7			3.3			.4	1973
NOV	91			70	110	1300	.14		2.0	12.3	26	2.2	6.5	23	.3	1330
DEC	95					1800			2.2			2.8				1641
TOTAL	1176	12.2	-	-	-	-	-	-	26.2	-	-	29.4	-	-	-	17429
AVG.	1.7 cu. ft/mil gal	2.4	5.0	99	128	1500	.16		2.2	8.8	33	2.5	14.5	25	1.0	1452

* Chlorination period: June 1 - October 31